A review of the genus *Borboropsis*
(Diptera: Heleomyzidae)[1]

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The genus *Borboropsis* Czerny was originally proposed in 1902 to include the single Holarctic species *B. fulviceps* (Strobl). A second species, *B. steyskali* n. sp., is described below from Oregon. Notes on the generic limits, figures, and a key are also included.

Although the genus *Borboropsis* is readily placed in the Heleomyzinae, the absence of well defined preapical tibial bristles and prominent costal spines are anomalies, atypical of most Heleomyzidae. Moreover, the absence of these structures, or their underdeveloped states, partially characterize this unique genus and led Collin (1943: 234) to consider *Borboropsis* as "the most aberrant Palaearctic genus of this family." With the addition of a second new species the generic concept must be altered somewhat, especially with reference to the development of preapical bristles and costal spines.

Czerny (1924, 1927) mentioned that *B. fulviceps* may have indistinct preapical bristles on the hind tibiae, but that no costal spines are present. In the most recent revision of the North American Heleomyzidae, Gill (1962) stated that dorsal preapical bristles are absent in *Borboropsis*, and further mentioned that the costal spines are absent, or that they are present but obscure.

Because of apparent ambiquities concerning the character states of these features in *B. fulviceps*, it might well be that the above authors were dealing with more than one species or that the species is polymorphic or polytypic. To assess these possibilities, I examined specimens determined as *B. fulviceps* from most of the major North American museums. Based on the material before me, *B. fulviceps* is neither polytypic nor polymorphic for these characters. The preapical dorsal spine on the hind tibia, although small and hair-like, is still evident, but I found no evidence of costal spines. *B. steyskali*, on the other hand, has a definite dorsal bristle on the hind tibia and the costal spines are distinct, although the development of both structures is somewhat less than typical of heleomyzids in general.

The addition of *B. steyskali* further complicates other taxonomic issues of importance. Subsequent to his description of *Borboropsis*,

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Czerny (1924) described a second genus, *Oldenbergiella*, which is closely related to *Borboropsis*. According to Czerny's description, *Oldenbergiella* has costal spines and one species, *O. callosa* Czerny, has distinct preapical bristles on all tibiae. Furthermore, *B. steyskali* runs to *Oldenbergiella* rather than *Borboropsis* in Czerny's key (1927).

Gill (p. 512), gives one additional character for separating the genera in his key and discussion of *Oldenbergiella*, "This genus is likely to be confused only with *Borboropsis* Czerny, from which it can be distinguished by the absence of a bristle in the posterior portion of the mesopleuron." The validity of *Oldenbergiella*, in view of apparent overlaps with *B. steyskali*, is perhaps questionable. Further study, especially with the male postabdomen, will be necessary to resolve this question.

B. steyskali is placed in the genus *Borboropsis* because the mesopleuron has a bristle in the posterior portion, because of its close similarity to *B. fulviceps*, and because *Borboropsis* has priority.

Because specimens are rare, a more complete systematic study of the two genera is not yet possible. It would be desirable to compare Nearctic specimens with Palaearctic material with special reference to genitalia. Recognition of *B. steyskali* as a new species is justified in view of the differences already noted and in the key. This is particularly true of characters found on the male postabdomen.

BORBOROPSIS Czerny

Borboropsis Czerny, 1902: 256; 1924: 67; 1927: 21—Collin, 1943: 2—Gill, 1962: 511.

KEY TO THE SPECIES OF BORBOROPSIS

Costa with distinct spines, length 3–4 mm., male genitalia as in figure *a*, dorsal preapical bristle present on hind tibiae .... *steyskali* n. sp.

Costal spines absent, length 2.4–3.1 mm., male genitalia as in figure *b*, preapical dorsal bristle on hind tibiae absent or weakly developed .... *fulviceps* (Strobl)

Borboropsis steyskali Mathis, new species

DIAGNOSIS.—This species is closely related to *B. fulviceps*, but differs from it with respect to the characters mentioned in the key.

MALE.—Head from lateral view with large cheeks, cheek-eye ratio 1.7; anterior half of front yellow and haired, becoming black and generally bare posteriorly; fronto-orbital plates with 2 bristles, covered with grayish pollinosity; ocellar triangle also covered with grayish pollinosity; eyes round; face and cheeks whitish-yellow; oral vibrissae distinct, strongly developed; cheeks haired; first and second antennal segments reddish-yellow; second segment with prominent dorsomedial bristle; third segment black, subglobose, covered with whitish pubescence; aristae pubescent; palpi brownish-yellow.

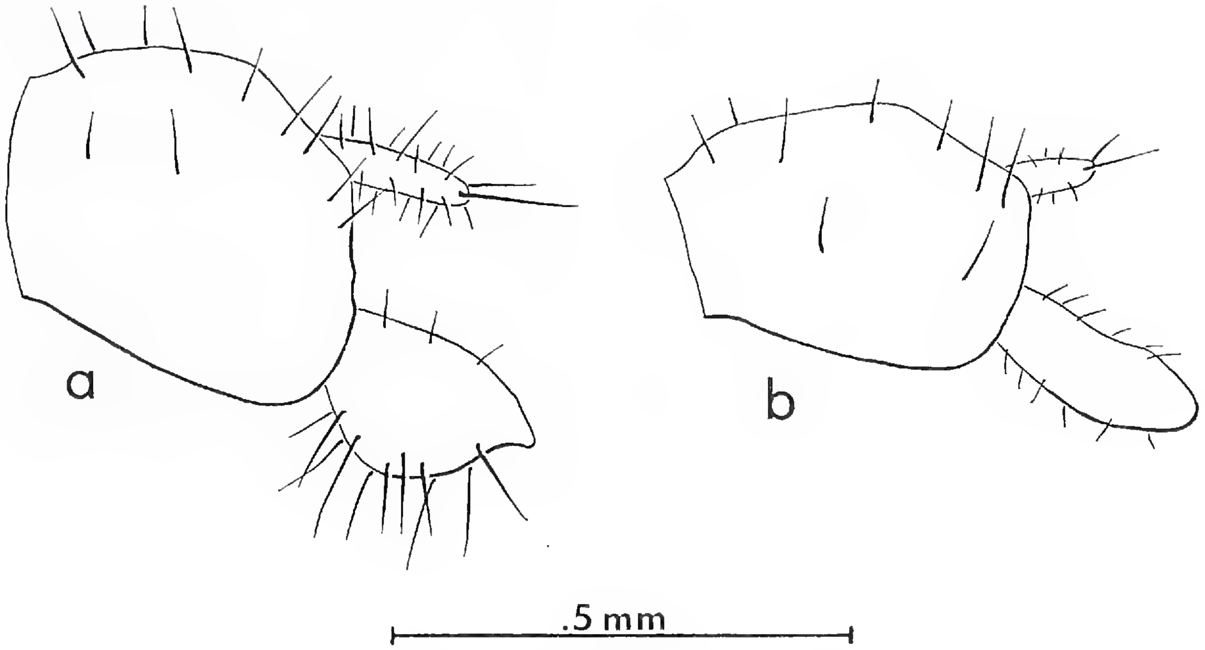

Fig. 1. Lateral view of epandrium, cercus, and surstylus. a. *Borboropsis steyskali*. b. *B. fulviceps*.

Thorax black; pollinosity of dorsum sparse, brownish-gray, becoming stronger and grayer on humerus, noto- and mesopleurae; acrostical hairs in 4 rows anteriorly, becoming stronger posteriorly and reduced to 2 rows; a pair of prescutellar bristles present; dorsocentrals 2 + 3, but only the posterior 2 pairs distinctly larger than dorsocentral hairs; 1 presutural bristle; 1 supra-alar bristle; 2 postalar bristles; scutellum bare except for 2 pairs of lateral bristles; humerus haired with one bristle; notopleuron with 2 bristles on ventral margin; mesopleuron haired on posterior margin, 1 distinct posterodorsal bristle, 1 propleural bristle; sternopleuron with one posterodorsal bristle, a few hairs anterior to bristle.

Wings with costal spines distinct though small; hyaline.

Legs black to dirty yellow, becoming more yellow apically; fore coxae yellowed; mesotibiae with several ventral apical bristles; preapical bristle on hind tibiae present but small.

Abdomen generally black but yellowed marginally; male protandrium asymmetrical, terga of segments 6, 7, and 8 strongly displaced; andrium more symmetrical; epandrium from a lateral view subquadrate, posteroventral margin slightly drawn out; cerci bacilliform and hairy; surstyli rounded and enlarged ventrally, tapering and recurved toward apex, ventral and dorsomedial margin bearing several long bristles.

Female.—Similar to male except for the female postabdomen.

Distribution.—Oregon, March–May.

Holotype male, Oregon, Lane County, H. J. Andrews Experimental Forest near Blue River, Clearcut area number L107, April 23, 1973, Rotary net, M. Mispagel collector, sample # (43-17), IBP Biome Survey–W. P. Nagel and G. Daterman. Allotype (female), Oregon, Lane County, H. J. Andrews Experimental Forest near Blue River.

Young age Doug Fir stand, number L105, March 27, 1973, Rotary net, M. Mispagel collector, sample # (41-13), IBP Biome Survey–W. P. Nagel and G. Daterman. Paratypes: 12 males, 6 females, same data as holotype and allotype except for the dates which go from the 27th of March through the 9th of May, 1973.

The holotype, allotype, and 2 paratypes will be deposited in the USNMNH (no. 72839); a male and female paratype will be deposited in the California Academy of Sciences, San Francisco; the Canadian National Collection, Ottawa; Washington State University, Pullman; and at Oregon State University, Corvallis. The remaining paratypes will remain in the collection of the author.

REMARKS.—The type specimens were all collected in a rotary trap in an insect survey being conducted by the International Biological Program, Coniferous Forest Biome.

I am pleased to dedicate this new species to my good friend and dipterist, George C. Steyskal, whose assistance is gratefully acknowledged.

BORBOROPSIS FULVICEPS (Strobl)

Anthomyza fulviceps Strobl, 1898: 269.
Borboropsis fulviceps (Strobl), Czerny, 1902: 256; 1924: 67; 1927: 22.

DIAGNOSIS.—This species is very similar to *B. steyskali* except as indicated in the discussion and key. The male andrium and cerci are of special importance and are illustrated in figure *b*.

DISTRIBUTION.—Holarctic.

SPECIMENS EXAMINED.—CANADA: Yukon Territory, Herchel I., 22 July 1971, W. R. M. Mason, 1 female; North West Territories, Muskox, 64°45′ N., 108°10′ W., 4 August 1953, J. G. Chillcott, 1 female, 2 males; British Columbia, Robson, 30 September 1949, H. R. Foxlee, 1 female; Saskatchewan, Otosquen, 12 September 1959, J. R. Vockeroth, 1 female, 1 male; Manitoba, Hudson Bay Road, mile 500, 3 August 1952, J. G. Chillcott, 1 female, Churchill, 30 July 1952, J. G. Chillcott, 1 female, Churchill, 25 August 1950, J. G. Chillcott, 1 male, Fort Churchill, 11 August 1952, J. G. Chillcott, 1 male; Quebec, Harrington Lake, Gatineau Park, 26 October 1960, G. E. Shewell, 1 female. UNITED STATES: Alaska, Matanuska, 28 September 1945, Rotary trap collection, J. C. Chamberlin, 1 male, 1 female; Alaska, Matanuska, 5 October 1945, J. C. Chamberlin, 1 female; Washington, Longmire, 27 June 1935, A. L. Melander, 1 male.

REMARKS.—This species is most readily distinguished from *B. steyskali* by differences in the male genitalia, absence of costal spines, weakly developed dorsal preapical bristles on the hind tibiae, and the reduced size. The species has only been rarely collected and nothing is known of its biology. It is interesting and perhaps significant that the Alaskan specimens were also collected in a rotary trap.

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SCIENTIFIC NOTE

Fumigation of museum specimens in oven-cooking bags.—Insect boxes of lightweight cardboard and designed for mailing provide no protection against museum pests. Damage during storage can be reduced by placing the boxes in polyethylene bags with crystals of paradichlorobenzene. Unfortunately the fumigant readily escapes through the bag wall and thereby creates a health hazard. Oven-cooking bags of Reynolon® film (heat stabilized polymer resin as used in Reynolds Brown-in-Bag® oven bags) minimize loss of the fumigant while retaining the desirable features of transparency and adaptable shapes and sizes. As a demonstration, 20 grams of paradichlorobenzene were placed in a 14 × 20 inch bag of each type, inflated, and closed with rubber bands. After 49 days no crystals or odor remained in the polyethylene bag, but only 1.8% of the weight of the crystals had been lost in the Reynolon film bag. This method of protection is also suitable for anthropological and art objects of wood, leather, fur, feathers, etc. Furthermore, Reynolon film bags retain the vapors of ethyl acetate, chloroform, and carbon tetrachloride, thus offering an improvement for the sweep-sampling technique described by Chemsak (1957, J. Econ. Entomol., 50(4): 523). Reynolon film bags are available in several sizes from retail stores and in tube form from the manufacturer.—Howell V. Daly, *University of California, Berkeley.*